Multiplication Combinations (page 1 of 6)

One of your goals in math class this year is to learn all the multiplication combinations up to 12 × 12.

1 x 1	1 x 2	1 x 3	1 x 4	1 x 5	1 x 6	1 x 7	1 x 8	1 x 9	1 x 10	1 x 11	1 x 12
2 x 1	2 x 2	2 x 3	2 x 4	2 x 5	2 x 6	2 x 7	2 x 8	2 x 9	2 x 10	2 x 11	2 x 12
3 x 1	3 x 2	3 x 3	3 x 4	3 x 5	3 x 6	3 x 7	3 x 8	3 x 9	3 x 10	3 x 11	3 x 12
4 x 1	4 x 2	4 x 3	4 x 4	4 x 5	4 x 6	4 x 7	4 x 8	4 x 9	4 x 10	4 x 11	4 x 12
5 x 1	5 x 2	5 x 3	5 x 4	5 x 5	5 x 6	5 x 7	5 x 8	5 x 9	5 x 10	5 x 11	5 x 12
6 x 1	6 x 2	6 x 3	6 x 4	6 x 5	6 x 6	6 x 7	6 x 8	6 x 9	6 x 10	6 x 11	6 x 12
7 x 1	7 x 2	7 x 3	7 x 4	7 x 5	7 x 6	7 x 7	7 x 8	7 x 9	7 x 10	7 x 11	7 x 12
8 x 1	8 x 2	8 x 3	8 x 4	8 x 5	8 x 6	8 x 7	8 x 8	8 x 9	8 x 10	8 x 11	8 x 12
9 x 1	9 x 2	9 x 3	9 x 4	9 x 5	9 x 6	9 x 7	9 x 8	9 x 9	9 x 10	9 x 11	9 x 12
10 x 1	10 x 2	10 x 3	10 x 4	10 x 5	10 x 6	10 x 7	10 x 8	10 x 9	10 x 10	10 x 11	10 x 12
11 x 1	11 x 2	11 x 3	11 x 4	11 x 5	11 x 6	11 x 7	11 x 8	11 x 9	11 x 10	11 x 11	11 x 12
12 x 1	12 x 2	12 x 3	12 x 4	12 x 5	12 x 6	12 x 7	12 x 8	12 x 9	12 x 10	12 x 11	12 x 12

There are 144 multiplication combinations on this chart. You may think that learning all of them is a challenge. (Remember that last year you learned all of them up to a product of 50.) On the next few pages you will find some suggestions to help you learn the multiplication combinations.

As you practice these multiplication combinations, make two lists like those shown.

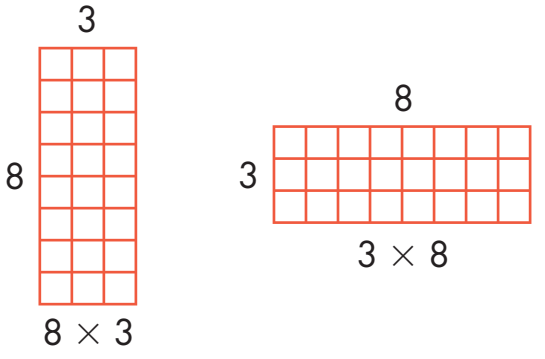
Combinations I Know	Combinations I'm Working On

Multiplication Combinations (page 2 of 6)

Learning two combinations at a time

To help you learn multiplication combinations, think about two combinations at a time, such as 8×3 and 3×8.

These two problems look different, but have the same answer.



When you know that $8 \times 3 = 24$, you also know that $3 \times 8 = 24$.

You have learned two multiplication combinations!

By "turning around" combinations and learning them two at a time, the chart of multiplication combinations is reduced from 144 to 78 combinations to learn!

1 x 1	1 x 2	1 x 3	1 x 4	1 x 5	1 x 6	1 x 7	1 x 8	1 x 9	1 x 10	1 x 11	1 x 12
2 x 1 1 x 2	2 x 2	2 x 3	2 x 4	2 x 5	2 x 6	2 x 7	2 x 8	2 x 9	2 x 10	2 x 11	2 x 12
3 x 1 1 x 3	3 x 2 2 x 3	3 x 3	3 x 4	3 x 5	3 x 6	3 x 7	3 x 8	3 x 9	3 x 10	3 x 11	3 x 12
4 x 1 1 x 4	4 x 2 2 x 4	4 x 3 3 x 4	4 x 4	4 x 5	4 x 6	4 x 7	4 x 8	4 x 9	4 x 10	4 x 11	4 x 12
5 x 1 1 x 5	5 x 2 2 x 5	5 x 3 3 x 5	5 x 4 4 x 5	5 x 5	5 x 6	5 x 7	5 x 8	5 x 9	5 x 10	5 x 11	5 x 12
6 x 1 1 x 6	6 x 2 2 x 6	6 x 3 3 x 6	6 x 4 4 x 6	6 x 5 5 x 6	6 x 6	6 x 7	6 x 8	6 x 9	6 x 10	6 x 11	6 x 12
7 x 1 1 x 7	7 x 2 2 x 7	7 x 3 3 x 7	7 x 4 4 x 7	7 x 5 5 x 7	7 x 6 6 x 7	7 x 7	7 x 8	7 x 9	7 x 10	7 x 11	7 x 12
8 x 1 1 x 8	8 x 2 2 x 8	8 x 3 3 x 8	8 x 4 4 x 8	8 x 5 5 x 8	8 x 6 6 x 8	8 x 7 7 x 8	8 x 8	8 x 9	8 x 10	8 x 11	8 x 12
9 x 1 1 x 9	9 x 2 2 x 9	9 x 3 3 x 9	9 x 4 4 x 9	9 x 5 5 x 9	9 x 6 6 x 9	9 x 7 7 x 9	9 x 8 8 x 9	9 x 9	9 x 10	9 x 11	9 x 12
10 x 1 1 x 10	10 x 2 2 x 10	10 x 3 3 x 10	10 x 4 4 x 10	10 x 5 5 x 10	10 x 6 6 x 10	10 x 7 7 x 10	10 x 8 8 x 10	10 x 9 9 x 10	10 x 10	10 x 11	10 x 12
11 x 1 1 x 11	11 x 2 2 x 11	11 x 3 3 x 11	11 x 4 4 x 11	11 x 5 5 x 11	11 x 6 6 x 11	11 x 7 7 x 11	11 x 8 8 x 11	11 x 9 9 x 11	11 x 10 10 x 11	11 x 11	11 x 12
12 x 1 1 x 12	12 x 2 2 x 12	12 x 3 3 x 12	12 x 4 4 x 12	12 x 5 5 x 12	12 x 6 6 x 12	12 x 7 7 x 12	12 x 8 8 x 12	12 x 9 9 x 12	12 x 10 10 x 12	12 x 11 11 x 12	12 x 12

Multiplication Combinations (page 3 of 6)

A helpful way to learn multiplication combinations is to think about one category at a time. Here are some categories you may have seen before. You probably already know many of these combinations.

Learning the ×1 combinations

You may be thinking about only one group.

1 group of 9 equals 9

 → 1 x 9 = 9

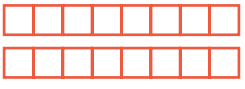
You may also be thinking about many groups of 1.

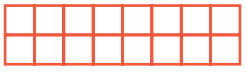
6 groups of 1 equal 6

 → 6 x 1 = 6

Learning the ×2 combinations

Multiplying by 2 is the same as doubling a number.

 → 8 + 8 = 16

 → 2 x 8 = 16

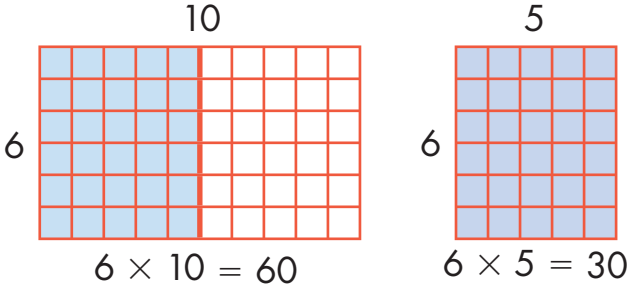
Learning the ×10 and ×5 combinations

You can learn these combinations by skip counting by 10s and 5s.

10, 20, 30, 40, 50, 60 → 6 x 10 = 60

5, 10, 15, 20, 25, 30 → 6 x 5 = 30

Another way to find a ×5 combination is to remember that it is half of a ×10 combination.



6 x 5 (or 30) is half of 6 x 10 (or 60).

Multiplication Combinations (page 4 of 6)

Here are some more categories to help you learn the multiplication combinations.

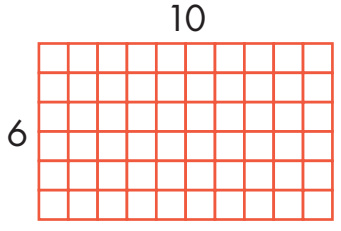
Learning the ×11 Combinations

Many students learn these combinations by noticing the double-digit pattern they create.

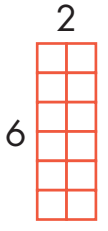
$$\begin{array}{r} 11 \\ \times\ 3 \\ \hline 33 \end{array} \quad \begin{array}{r} 11 \\ \times\ 4 \\ \hline 44 \end{array} \quad \begin{array}{r} 11 \\ \times\ 5 \\ \hline 55 \end{array} \quad \begin{array}{r} 11 \\ \times\ 6 \\ \hline 66 \end{array} \quad \begin{array}{r} 11 \\ \times\ 7 \\ \hline 77 \end{array}$$

Learning the ×12 Combinations

Many students multiply by 12 by breaking the 12 into 10 and 2.



$6 \times 10 = 60$

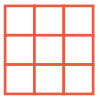


$6 \times 2 = 12$

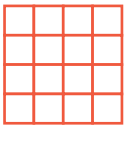
$6 \times 12 = (6 \times 10) + (6 \times 2)$
$6 \times 12 = 60 + 12$
$6 \times 12 = 72$

Learning the Square Numbers

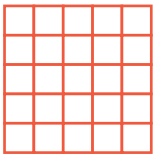
Many students remember the square number combinations from experiences building the squares with tiles or drawing them on grid paper.



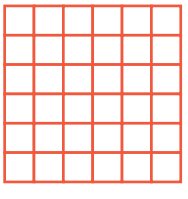
$$\begin{array}{r} 3 \\ \times\ 3 \\ \hline 9 \end{array}$$



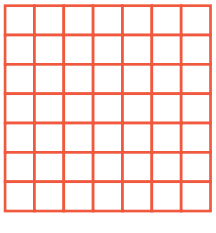
$$\begin{array}{r} 4 \\ \times\ 4 \\ \hline 16 \end{array}$$



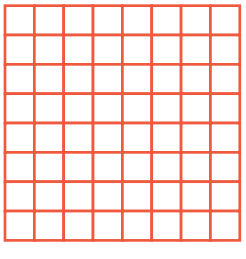
$$\begin{array}{r} 5 \\ \times\ 5 \\ \hline 25 \end{array}$$



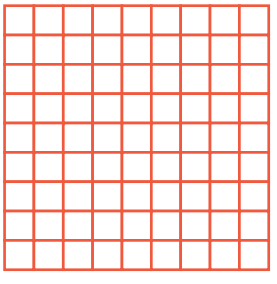
$$\begin{array}{r} 6 \\ \times\ 6 \\ \hline 36 \end{array}$$



$$\begin{array}{r} 7 \\ \times\ 7 \\ \hline 49 \end{array}$$



$$\begin{array}{r} 8 \\ \times\ 8 \\ \hline 64 \end{array}$$



$$\begin{array}{r} 9 \\ \times\ 9 \\ \hline 81 \end{array}$$

Multiplication Combinations (page 5 of 6)

After you have used all these categories to practice the multiplication combinations, you have only a few more to learn.

1 x 1	1 x 2	1 x 3	1 x 4	1 x 5	1 x 6	1 x 7	1 x 8	1 x 9	1 x 10	1 x 11	1 x 12
2 x 1	2 x 2	2 x 3	2 x 4	2 x 5	2 x 6	2 x 7	2 x 8	2 x 9	2 x 10	2 x 11	2 x 12
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7 x 1	7 x 2	7 x 3 3 x 7	7 x 4 4 x 7	7 x 5	7 x 6 6 x 7	7 x 7	7 x 8	7 x 9	7 x 10	7 x 11	7 x 12
8 x 1	8 x 2	8 x 3 3 x 8	8 x 4 4 x 8	8 x 5	8 x 6 6 x 8	8 x 7 7 x 8	8 x 8	8 x 9	8 x 10	8 x 11	8 x 12
9 x 1	9 x 2	9 x 3 3 x 9	9 x 4 4 x 9	9 x 5	9 x 6 6 x 9	9 x 7 7 x 9	9 x 8 8 x 9	9 x 9	9 x 10	9 x 11	9 x 12
10 x 1	10 x 2	10 x 3	10 x 4	10 x 5	10 x 6	10 x 7	10 x 8	10 x 9	10 x 10	10 x 11	10 x 12
11 x 1	11 x 2	11 x 3	11 x 4	11 x 5	11 x 6	11 x 7	11 x 8	11 x 9	11 x 10	11 x 11	11 x 12
12 x 1	12 x 2	12 x 3	12 x 4	12 x 5	12 x 6	12 x 7	12 x 8	12 x 9	12 x 10	12 x 11	12 x 12

As you practice all of the multiplication combinations, there will be some that you "just know" and others that you are "working on" learning.

One way to practice a combination that is hard for you is to make a Multiplication Clue Card. Think of a combination you already know that you can start with to help you learn the harder one.

You will make your own Multiplication Cards for combinations that are hard for you.

On the next page are examples of Multiplication Cards made by students to help them learn 7×8 and 8×7.

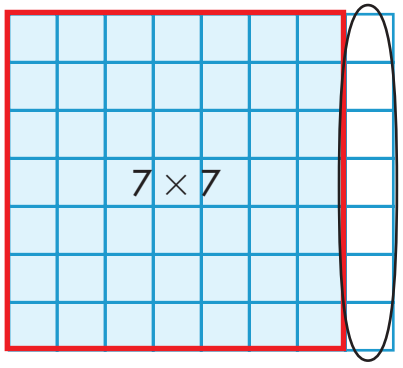
7×8
8×7

Start with _____

Multiplication Combinations (page 6 of 6)

Like many fourth graders, these students think that 7×8 is a hard multiplication combination to learn. Each of these students has a different strategy to solve 7×8. They use a multiplication combination that they know to help them solve 7×8.

Neomi: *I would do 7×7 and then add 7.*

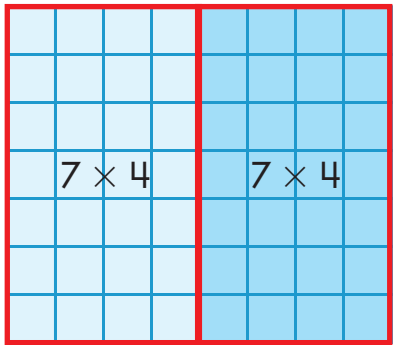


$$\begin{array}{r} 49 \\ +\ 7 \\ \hline 56 \end{array}$$

7×8
8×7

Start With 7 x 7
Neomi

Alejandro: *I would double a 7 by 4 array to make 7×8.*



$$\begin{array}{r} 7 \\ \times\ 4 \\ \hline 28 \end{array}$$

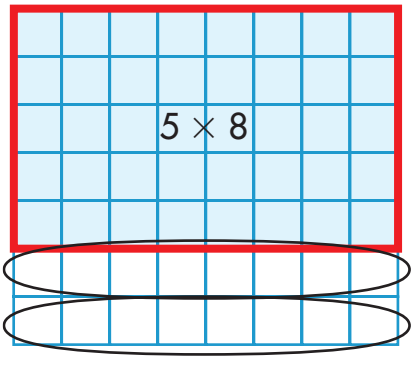
$20 + 20 + 8 + 8 = 56$

$40 + 16 = 56$

7×8
8×7

Start With 7 x 4
Alejandro

Ramona: *I think of it as seven 8s. I would start at 5×8 and keep skip counting by 8s.*



$5 \times 8 = 40$

$40 + 8 = 48$

$48 + 8 = 56$

7×8
8×7

Start With 5 x 8
Ramona